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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,262	01/03/2002	Stephen Karl Heeks	C1043/7034	7553

22852 7590 05/09/2003

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EXAMINER

GUHARAY, KARABI

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 05/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/868,262

Applicant(s)

HEEKS ET AL.

Examiner

Karabi Guharay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 September 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☒ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4. 6) ☐ Other: .

Priority

Acknowledgment is made of applicant's claim for foreign priority based on an application filed in United Kingdom on 17 December 1998. It is noted, however, that applicant has not filed a certified copy of the United Kingdom 9827827 application as required by 35 U.S.C. 119(b).

Drawings

The drawings are objected to because Fig 7, as disclosed in specification as the 7th embodiment of the invention is not present in the application. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The proposed drawing correction should not introduce new matter, which does not support the original disclosure. 37 CFR 1.121(f) states that no amendment may introduce new matter into the disclosure of an application.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: #. 22 of Fig 6. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Since no Fig 7 is provided, layers 24, and 26, as disclosed on page 7, are not supported by the drawing.

Preliminary Amendment A, filed on 03 January 2001, has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 11 recites the broad recitation group of materials including AlN, Al₂O₃, SiO₂ and Si₃N₄, and the claim also recites AlN, which is the narrower statement of the range/limitation.

Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 5 recites the limitation "the cathode". There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2, 5-6, 10-11, 13, 16, 18, 23-25, 29, 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Harvey III et al. (US 5686360).

Regarding claims 1, 23 & 31, Harvey discloses an organic light emitting device (20 of Fig 4) comprising a layer of light emission material 14 (Fig 2) interposed between a first electrode 13 (anode) and second electrode 15 (cathode), comprising one or more electrode layers on the light emissive organic material for injecting charge carriers into the light emissive organic material (lines 9-13 of column 4), wherein the OLED further comprises a layer of dielectric material 18 on the surface of electrode layer 13 remote from the light emissive organic material 14 (Fig 3, lines 1-4 of column 5), and deposited by vacuum evaporation technique as in claim 23 (lines 8-9 of column 5).

Regarding claim 2, Harvey discloses that the dielectric material 18 is selected from the group consisting of SiO, AlN, SiO₂, Si₃N₄ and Al₂O₃ (lines 4-7 of column 5).

Regarding claim 5, Harvey discloses a second layer of dielectric 17 (polymer layer) on the first layer of dielectric material 18 (Fig 2).

Regarding claim 6, Harvey discloses that the first and second dielectric layers comprise layers of different dielectric material (layer 17 is a transparent polymer material, while layer 18 is an inorganic dielectric material (lines 52-55 of column 4).

Regarding claim 10, Harvey discloses an organic light emitting device (20 of Fig 4) comprising a layer of light emission material 14 (Fig 2) interposed between a first electrode 13 (anode) and second electrode 15 (cathode), comprising one or more electrode layers on the light emissive organic material for injecting charge carriers into the light emissive organic material (lines 9-13 of column 4), wherein the OLED further has a stack comprising a first inert barrier layer 28 and at least one gettering layer 26 (Fig 4) interposed between the outer electrode 15 and the first inert barrier layer for absorbing moisture and oxygen (lines 55-66 of column 5).

Regarding claim 11, Harvey discloses that the dielectric material 18 is selected from the group consisting of AlN, SiO₂, Si₃N₄ and Al₂O₃ (lines 60-61 of column 5).

Regarding claim 13, Harvey discloses a second inert layer (buffer layer 24 of Fig 4) interposed between the getter layer 26 and the electrode 15.

Regarding claims 16 & 18, Harvey discloses that the getter layer 26 is a layer of a reactive metal (Li or Mg, lines 61-64 of column 5).

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Regarding claim 24, Harvey discloses the step of forming a second dielectric layer 17 on the surface of the first dielectric 18 (see Fig 2).

Regarding claim 25, Harvey discloses that the first dielectric material comprises silicon monoxide (line 5 of column 5).

Regarding claim 29, Harvey discloses that the second dielectric layer 17 is formed by sputtering (lines 8-9 of column 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3-9, 12, 14, 15, 17, 19, 20, 26-28, 30 rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey as applied to claim 1.

Regarding claims 3, 7-8 & 30, Harvey fails to disclose that the first dielectric material is AlN (as in claim 3) and the second dielectric is selected from the group consisting of AlN, SiO₂, Si₃N₄ and Al₂O₃ (as in claims 7 & 30) and the second dielectric layer material is Al₂O₃ (as in claim 8) instead discloses other dielectric material such as silicon dioxide or silicon nitride for the first dielectric layer, while the second dielectric is a transparent polymer layer. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use AlN, for the first dielectric layer and Al₂O₃ for the second dielectric layer, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use.

Regarding claims 4, 9 & 26-28, & 12, 15, 20, Harvey discloses that thicknesses of the each layer are too thin (lines 60-63 of column 3) but fail to disclose the claimed range of thickness. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to obtain the desired range, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art.

Regarding claim 14, Harvey fails to disclose that the second barrier layer is a layer of aluminum and the first barrier layer is AlN, whereas Harvey discloses that as inert layer 28 stable metal Al can be used, thus it would have been obvious to one having ordinary skill in the art to select known suitable materials for the intended purpose.

Regarding claim 17, and 19, Harvey fails to disclose that the getting material is either BaO or Ca. But these two materials are well known getter material. Thus selection of these known materials on the basis of their suitability for the intended use is considered to be within the general skill of a worker in the art.

Claims 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harvey III et al. as applied to claim 1 above, and further in view of Hung et al. (US 5776622).

Regarding claims 21-22, Harvey discloses all the claimed limitation of claim 21(see rejection of claim 10) except that the one of first and second electrodes is a multi-layered electrode comprising a first low work function conductive layer on the light emissive layer and a second conductive layer on the first layer. However, Hung teaches to have multi-layered cathode in an organic EL device having a first low work function conductive layer of calcium having a thickness 200nm or less, on the light emitting layer and a second conductive layer of aluminum having a thickness of 5 micron or less (lines 21-27 of column 5, and line 1 of column 5, and claim 2) This multi-layer cathode providing stability against atmospheric corrosion (see abstract). Thus it would have been obvious to one having ordinary skill in the art at the time the invention was made to introduce multi-layered cathode in the device of Harvey in order to obtain stability against atmospheric corrosion.

Other Prior Art Cited

The prior art made of record and not relied upon is considered pertinent to

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applicant's disclosure : Wakimoto (US 5739635); Namiki et al. (US 5429884); Utsugi
(US 5747930); Pichler et al. (US 6402579); Jones et al. (US 6198220) ; Ebisawa et al.
(US 6284342); Shi et al. (US 5811177).


Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (703) 305-1971. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.G
Karabi Guharay
Patent Examiner
Art Unit 2879


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